

GROUND-WATER WITHDRAWALS FROM THE FLORIDAN AQUIFER SYSTEM IN THE SOUTHEASTERN UNITED STATES DURING 2000

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REFERENCE: *Proceedings of the 2003 Georgia Water Resources Conference*, held April 23–24, 2003, at the University of Georgia. Kathryn J. Hatcher, Editor, Institute of Ecology, The University of Georgia, Athens, Georgia.

Abstract. The Floridan aquifer system is a highly productive limestone aquifer system that encompasses about 100,000 square miles in the southeastern United States (Figure 1). This aquifer system provides large quantities of water that generally need little or no treatment before use. More than 10 million people, mostly in Florida and Georgia, depend on the Floridan aquifer system for drinking water (serving 8.2 million people through public water supplies and 1.8 million through individual household wells). The aquifer system also provides water that supports agriculture, phosphate and limestone mining, pulp and paper manufacturing, and tourism. This aquifer system is unconfined in many places and has direct hydraulic connection with the land surface. The aquifer system is one of sixteen principal aquifers in the United States currently included in the National Water-Quality Assessment (NAWQA) program of the U.S. Geological Survey.

Estimated water withdrawn from the Floridan aquifer system during 2000 totaled 4,111 million gallons per day (Mgal/d). This included 3,188 Mgal/d (77.5 percent) withdrawn in Florida, 819 Mgal/d (20 percent) withdrawn in Georgia, 63 Mgal/d (1.5 percent) withdrawn in South Carolina, and 41 Mgal/d (1 percent) withdrawn in Alabama. The two largest categories of withdrawals were agricultural irrigation (1,875 Mgal/d) and public supply (1,352 Mgal/d), which accounted for 78 percent of the water withdrawn in 2000. Other withdrawals included the combined commercial, industrial, mining, and power generation category (565 Mgal/d); domestic self-supplied (173 Mgal/d); and golf course and other recreation irrigation (146 Mgal/d).

In most areas where yields are adequate, the Floridan aquifer system is the primary source of water for all purposes due to the high quality of the water. Eleven counties, all located in Florida (Brevard, DeSoto, Duval, Highlands, Hillsborough, Lake, Manatee, Orange, Osceola, Pasco, and Polk) had withdrawals greater than 100 Mgal/d from the aquifer system during 2000. The combined total of these 11 counties accounted for 45 percent (1,836 Mgal/d) of the total water withdrawn. Polk (337 Mgal/d) and Orange (286 Mgal/d) Counties

accounted for the largest withdrawals of water from the aquifer system.

Reliance on the Floridan aquifer system to meet water demands increased substantially between 1950 and 2000. Withdrawals increased from 630 Mgal/d in 1950 to 4,111 Mgal/d in 2000, representing an increase of greater than 550 percent. During this period, the population of Alabama, Florida, Georgia, and South Carolina increased along with tourism and irrigated acreage. These factors have contributed to the increase in withdrawals from the aquifer system. In addition to water withdrawals, more than 600 springs in Florida and Georgia discharged an estimated 12,200 Mgal/d of water from the aquifer. The aquifer system represents a significant regional water resource for human needs, agriculture, and wildlife throughout much of the southeastern United States. Monitoring the water use and water quality of this aquifer system is needed to preserve this valuable resource.

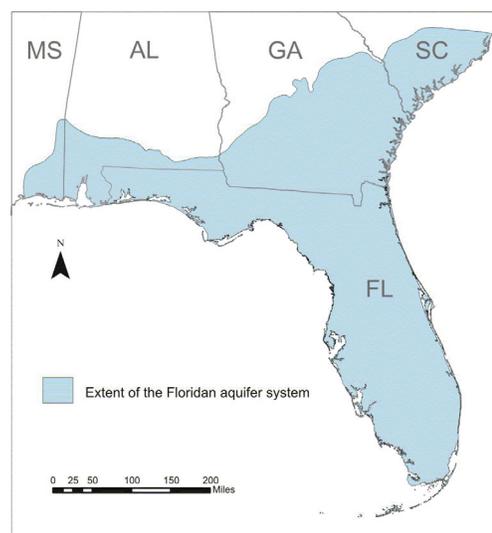


Figure 1. Extent of Floridan aquifer system.

[Modified from Miller, J.A., 1986, Hydrogeologic framework of the Floridan aquifer system in Florida and in parts of Georgia, Alabama, and South Carolina, U.S. Geological Survey Professional Paper 1403-B, 91 pp.]